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Onthophagus pilauco sp. nov. (Coleoptera, Scarabaeidae): evidence of beetle extinction in the Pleistocene–Holocene transition in Chilean Northern Patagonia

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Abstract

The South American Pleistocene–Holocene transition has been characterized by drastic climatic and diversity changes. These rapid changes induced one of the largest and most recent extinctions in the megafauna at the continental scale. However, examples of the extinction of small animals (e.g., insects) are scarce, and the underlying causes of the extinction have been little studied. In this work, a new extinct dung beetle species is described from a late Pleistocene sequence (~15.2 k cal yr BP) at the paleoarcheological site Pilauco, Chilean Northern Patagonia. Based on morphological characters, this fossil is considered to belong to the genus Onthophagus Latreille, 1802 and named Onthophagus pilauco sp. nov. We carried out a comprehensive revision of related groups, and we analyzed the possible mechanisms of diversification and extinction of this new species. We hypothesize that Onthophagus pilauco sp. nov. diversified as a member of the escalatus species-complex following migration processes related to the Great American Biotic Interchange (~3 Ma). The extinction of O. pilauco sp. nov. may be related to massive defaunation and climatic changes recorded in the Plesitocene-Holocene transition (12.8 k cal yr BP). This finding is the first record of this genus in Chile, and provides new evidence to support the collateral-extinction hypothesis related to the defaunation.

Keywords

Dung beetle, extinction, fossil beetles, new species, Pleistocene, South America

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